

Hosting, producing and brokering: how collaborative spaces engage with local innovation ecosystems

Abstract

In recent years, we have witnessed a proliferation of settings reflecting a culture of collaboration and openness, such as coworking spaces, incubators/accelerators, makerspaces, and creative hubs. Such settings are labeled as “collaborative spaces”, as they are expected to facilitate collaborative relationships both among their users and with external actors, thus favoring creativity and innovation at the individual, organizational, and territorial level. Recent studies recognize that collaborative spaces sustain collaboration among multiple local actors and, thus, favor open and participative innovation processes. However, the question of how collaborative spaces engage with their local innovation ecosystem is still left pending. The present study aims to fill this gap. Drawing on an interpretive review and a qualitative multiple case study, our paper identifies three forms of engagement - i.e., “hosting”, “producing”, and “brokering” - that can be enacted by collaborative spaces through a complex set of specific actions. We suggest that brokering embraces and enables both hosting and producing to activate a “virtuous cycle” that couples inbound and outbound innovation processes, as the hosting of external actors (and externally produced activities) favors the production of activities by and within collaborative spaces, after which these activities are projected outward, and so forth.

Keywords: collaborative spaces, local innovation ecosystems, engagement, open innovation

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1. Introduction

In recent years, the locus of innovation has shifted from individual entrepreneurs and organizations to the overall local ecosystem that encompasses them, as the knowledge and resources required to trigger innovation are often dispersed across multiple actors. Within this scenario, the collaboration, and relational dynamics underlying innovation have attracted greater attention from theory and practice (see Cavallo et al., 2018), with innovation being framed as a multi-stakeholder, multi-modal, and multi-scalar endeavor as a result.

Models of open innovation have emerged (Chesbrough, 2003) and many companies have started establishing inter-organizational partnerships and networks, along with purposive *inbound* and *outbound* flows, to accelerate internal innovation processes and market the resulting outputs more successfully (e.g., Cassiman & Valentini, 2016; Chesbrough, 2003; Enkel et al., 2009; Lichtenthaler, 2011; West & Bogers, 2016). However, such models do not only take the perspective of companies, instead emphasizing the need for a more user-centric and community-oriented approach by positioning the local community and its needs and expectations at the forefront of how innovation should be pursued (Borghys et al., 2020; Carayannis & Campbell, 2009).

Open innovation models also share an ecosystemic approach to innovation (e.g., Autio & Thomas, 2014; Cavallo et al., 2018), thus positing that innovative activities tend to concentrate territorially, and their spatial distribution is not random but depends on local institutions and the quality of the actors involved in innovation processes (Crouch et al. 2004).

In such a context, a crucial role can be played by collaborative spaces, as they can favor not only physical closeness but also other forms of proximity (Mariotti & Akhavan 2020; see also Boschma, 2005) by facilitating social interaction, knowledge exchange, and collaboration among local actors pertaining to different sectors and carrying out different activities. Collaborative spaces, such as coworking spaces, incubators/accelerators, makerspaces, and creative hubs (e.g., Capdevila, 2019; Howell, 2022; Montanari et al., 2020), have emerged in more recent years. The existing literature has already suggested the potential role of collaborative spaces within their local innovation ecosystems, for instance, by showing how collaborative spaces have often favored collaboration among different local stakeholders (e.g., private and public, formal and informal) along with a broader transition toward more open and participatory governance of innovation at the local level (see Krasilnikova, 2024; Mérindol & Versailles, 2022).

However, the question of how collaborative spaces engage with local actors has thus far been left pending. More specifically, the following research question arises: *What forms of engagement do collaborative spaces may perform to foster innovation locally?*

Our study aims to answer this question by discussing the results of an exploratory study that draws on a mixed-method approach. More specifically, we combined an interpretive review (see Berrone et al., 2023; Seele et al., 2021; Suddaby et al., 2017) on 77 publications linking collaborative spaces to topics related to innovation, creativity, entrepreneurship, and local innovation with a qualitative multiple case study (see Yin, 2009) on seven Italian collaborative spaces. Basically, our findings uncover that collaborative spaces may engage within their local innovation ecosystems through “hosting”, “producing” and “brokering”, triggering a “virtuous cycle” in which the hosting of external actors (and externally produced activities and services) favors the production of activities and services by and within collaborative spaces, after which these activities are projected outward, and so forth. By acting as local brokers, collaborative

spaces can favor this virtuous cycle and couple inbound and outbound flows of knowledge and other resources, thus contributing to local innovation.

The study is structured as follows. First, we illustrate the theoretical framework and research questions by focusing on the recent proliferation of open models of innovation (e.g., “helix” and “ecosystemic” models) and situating collaborative spaces within such models. Next, we present the methods, and our main findings. In the last section, we discuss the results and provide a few suggestions for future research.

2. Theoretical framework

Traditionally, innovation was conceived as inherently closed (see Lichtenthaler, 2011), with operations mostly happening within the boundaries (and control) of each individual actor, and research and development being mostly restricted to secretive in-house laboratories and the resulting knowledge being protected from external influences (Borghys et al., 2020; Schuurman et al., 2014).

In more recent years, open models of innovation have emerged (Chesbrough, 2003), with many actors moving from a “silo mentality” of enclosure and protection of knowledge to increased distribution, sharing, and democratization of innovation (Baldwin & von Hippel, 2011; Chesbrough, 2003; see also Lorne, 2019). For instance, many companies have started establishing inter-organizational partnerships and networks, along with purposive *inbound* and *outbound* flows of knowledge and resources, to accelerate internal innovation processes and market the resulting outputs more successfully (e.g., Cassiman & Valentini, 2016; Chesbrough, 2003; Enkel et al., 2009; Lichtenthaler, 2011; West & Bogers, 2016). The activation (and combination) of inbound and outbound flows of knowledge and other resources is often crucial for companies to sustain innovative endeavors in the longer term. Indeed, whereas inbound flows (“from the outside-in”) may increase a company’s knowledge base through the

integration of suppliers, customers, or resources from external sources, outbound flows (“from the inside-out”) may allow companies to earn greater profits by bringing to the outside environment ideas, intellectual property, technology, or resources developed internally instead of keeping them inside. This shows how it is important for companies to gather, combine, and exploit inputs residing both inside and outside of their boundaries (e.g., Lichtenthaler, 2011) to deliver greater value to customers, achieve a more sustained competitive advantage, and increase the overall effectiveness of their innovative outputs (Chesbrough et al, 2006; see also Enkel et al., 2009).

Open models of innovation do not only take the perspective of companies, instead also emphasizing the need for a more user-centric and community-oriented approach positioning the local community and its needs and expectations at the forefront of how innovation should be pursued (Borghys et al., 2020). For instance, the literature on social innovation posits that companies, public bodies, and other actors seeking greater social impact should strive for ‘innovation that is explicitly for the social and public good [...]; innovation inspired by the desire to meet social needs’ of the local community that would otherwise be neglected by more traditional market provision and public welfare systems” (Murray et al., 2010: 10). In turn, by affording openness and incorporating the needs of the local community, local actors can also contribute more directly to social inclusion, cohesion, empowerment, and socioeconomic development.

The idea of local community as a key component of the innovation process originates from the so-called “helix” models (see Carayannis & Campbell, 2009). These models have evolved from the triple helix and rest on the assumption that innovation should be rooted in the interaction of multiple “spheres” of actors (or “helices”) that, by intertwining with one another, create an overall ecosystem sustaining innovation at the local level (e.g., Carayannis & Campbell, 2009; Hasche et al., 2020). Whereas the triple helix was originally modeled around

academia, companies, and public bodies (see Etzkowitz & Leydesdorff, 2000), the quadruple and quintuple helix models consider also local community and environment as crucial in transferring and co-producing knowledge and innovation (e.g., Borghys et al., 2020; Hasche et al., 2020; Krasilnikova 2024; Paskaleva et al., 2021). The quadruple-helix model has been used to study innovation processes that often require participation and collaboration among local actors, such as the design and implementation of public policies for cultural and creative industries (e.g., Comunian et al., 2014), urban regeneration (e.g., Montanari & Mizzau, 2016), and smart city strategies (e.g., Paskaleva et al., 2021). Within the quintuple-helix model, the natural environment, too, are seen as drivers for innovation, defining opportunities for the knowledge economy (Durán-Romero et al., 2020).

The territory thus becomes an integral part of innovation processes (Sassen, 2000) entailing a specific set of knowledge, know-how, and practices that can be particularly important for the effectiveness and success of innovation. (e.g., Ramella, 2015). Moreover, the territory may favor innovation thanks to the specific relational dynamics and the proximity and co-location of multiple actors, which can facilitate coordination, collaboration, and the knowledge circulation and cross-fertilization (e.g., Bathelt et al., 2004; Capello & Faggian, 2005).

What all the above mentioned perspectives have in common is therefore the ecosystemic approach (e.g., Autio & Thomas, 2014; Cavallo et al., 2018) – i.e., the idea that innovation tends to concentrate territorially, and its spatial distribution is not random but depends on local institutions and the quality of actors involved in innovation processes. More specifically, the ecosystemic approach recognizes three main aspects (e.g., Autio, 2022; Autio & Thomas, 2014). First, it recognizes the centrality of knowledge and human capital in generating new ideas. Second, it recognizes how the presence of local collective goods capable of generating external economies enhances the innovative capacity of businesses. Third, it recognizes the systemic and relational dimension of innovation, showing how actors leverage their

connections, both weak and strong, to convey material, cognitive, and normative resources (e.g., cohesion and trust). As a result, proximity – intended as not only physical but also as cognitive, organizational, social, and institutional – becomes a key factor in understanding local innovation processes (see Boschma 2005).

Such proximity can be fostered by mobilizing “physical nodes” within the local ecosystem. In the past, within business agglomerations such as Italian districts (see Becattini et al., 2014), Silicon Valley, or Route 128 (Saxenian, 1994), these nodes were basically represented by universities and training centers, or corporate or district museums, whose main goal was to promote the circulation of knowledge and trust, acting as knowledge integrators (see Buciuni & Pisano, 2018). Nowadays, crucial physical nodes appear to be collaborative spaces (e.g., Capdevila, 2015; Mariotti & Akhavan, 2020).

Indeed, according to Füzi (2015), most collaborative spaces are established with the explicit purpose to facilitate serendipitous encounters, shared practices, tacit knowledge, and the generation of new business opportunities (in addition to keeping costs to a minimum) for smaller companies, start-ups, solo entrepreneurs and freelancers, who most often do not have as many resources and connections as larger companies to engage in creativity and innovation (see also Wijngaarden et al., 2020). In doing so, they can facilitate cross-fertilization and “knowledge pipelines” among different local actors that otherwise would be “atomized” and dispersed albeit residing in the same territory (e.g., Schmidt & Brinks, 2017). Coherently, collaborative spaces have been conceptualized as a novel form of “micro-cluster” similar to an industrial cluster, yet on a smaller scale (e.g., Capdevila, 2015). They have also been found to support “boundaryless work” – e.g., testing and experimenting with new entrepreneurial ideas and business models – that favor innovation (e.g., Butcher, 2018; Schmidt et al., 2014). Collaborative spaces do so basically by offering their users the opportunity to combine knowledge from different domains (e.g., Schmidt et al., 2014). However, as Parrino (2015)

notes, proximity and co-location alone are not sufficient for this combination of knowledge – and, ultimately, for innovation – to occur. An active role of those who manage collaborative spaces is often required – e.g., by setting up “organizational platforms” that favor the networking and support for members to build up capabilities and resources for creative and innovative endeavors and embed themselves within the local ecosystem (e.g. Brown, 2017; Merkel, 2015; Parrino, 2015).

Thus, despite these recent accounts on how collaborative spaces may contribute to creativity, innovation, and entrepreneurship locally, the question of how collaborative spaces engage with multiple actors of their local ecosystems has far been left pending. To address this issue, we conducted an exploratory study that we present in the next sections.

3. Methods

To conduct our exploratory study, we used a mixed-method approach. More specifically, we first performed an interpretive review on the literature on collaborative spaces (see Berrone et al., 2023; Seele et al., 2021; Suddaby et al., 2017) to identify how they may engage with different local innovation actors. This type of review is adequate for multiple reasons. First, unlike traditional reviews, such as systematic or integrative ones, interpretive reviews are desirable to synthesize literature that is fragmented across multiple disciplines, methods, concepts, theories (e.g., Berrone et al., 2023; Kroezen et al., 2019), and when there is less cohesiveness among studies (e.g., Suddaby et al., 2017), as for the literature on collaborative spaces. Moreover, interpretive reviews are desirable when the research goal exceeds mere cross-referencing and seeks to provide clear and practical intent and “have an impact on audiences” by integrating theoretical and empirical knowledge on a specific topic (Berrone et al., 2023: 321). Finally, interpretive reviews seek to provide an account of “independent studies covering a phenomenon of interest by means of reviewers creating and associating their own

subjective and intersubjective meanings as they interact with the literature” (Kunisch et al., 2023: 17). Indeed, whereas integrative reviews intend to generate aggregative and knowledge-based results, interpretive reviews synthesize knowledge by combining induction and interpretation into more general findings (see Berrone et al., 2023).

As a first step, we searched for publications in the WoS and Scopus databases through the following string: (‘collaborative space*’ OR ‘coworking space*’ OR ‘co-working space*’ OR ‘incubator*’ OR ‘accelerator*’ OR ‘makerspace*’ OR ‘fablab*’ OR ‘fab-lab*’ OR ‘fab lab*’ OR ‘creative hub*’ OR ‘cultural hub*’) AND (‘innovation’ OR ‘creativity’ OR ‘entrepreneurship’ OR ‘ecosystem*’). We included in our search string keywords related to makerspaces, incubators/accelerators, and creative hubs to encompass all potential settings included within the broader umbrella term of “collaborative spaces” (see Montanari et al., 2020). The database search in WoS and Scopus was renewed multiple times up until January 2024, to ensure an updated review, yielding peer-reviewed articles and scholarly books and book chapters from multiple disciplines.

The publications were then screened for relevance. We erred on the side of including those publications that were more directly relevant to the focus of our study rather than on the side of inclusion broadly: accordingly, by following a principle of “saturation” (see Kunisch et al., 2023), we defined a final list of publications that could offer a fair coverage and a good sense of how topics such as innovation, creativity, entrepreneurship, and local ecosystems are addressed in the literature on collaborative spaces. Further relevant publication were added to our list through additional searches on Google Scholar and by screening the reference lists of previously retained publications to look for further relevant studies that could be consistent with our research goals. Indeed, integrating database searches with “snowball methods”, such as pursuing publications from reference lists, can produce the best yield of relevant articles

possible (Kunisch et al., 2023). We reached a final list of publications of 77 publications that we deemed most insightful to identify what specific forms of engagement with the local innovation ecosystem they may enact.

Then, to achieve a more fine-grained understanding of how collaborative spaces enact these three forms of engagement with their local innovation ecosystems, we carried out an exploratory multiple case study.

We analyzed seven collaborative spaces located all across Italy. More specifically, three spaces are, respectively, in northern Italy (Impact Hub in Milan, SerenDPT in Venice and G-Factor in Bologna) and in southern Italy (Entopan Innovation near Catanzaro and Molo12-The Qube in Lecce and Bari) and two spaces are located in central Italy (Impact Hub in Florence and Lventure Group in Rome). Beyond their location, the collaborative spaces we selected differ for their main, distinctive activities so much so that they can be identified as different types of collaborative spaces, i.e., some combine coworking and incubation (e.g., Molo 12/The Qube and the two Impact Hubs), others combine incubation with activities and characteristics more typical of creative hubs (e.g., SerenDPT), and others work purely as incubators and accelerators (e.g., Entopan, G-Factor, and Lventure Group).

Most of the selected collaborative spaces share an entrepreneurial orientation, as their core mission and values are strictly related to the support of corporate-level innovation and entrepreneurship. However, some of them also show a strong orientation toward the well-being and socioeconomic development of the local community (e.g. Molo12/The Qube, Impact Hub Florence, and SerenDPT). We selected our case studies also based on their different development stages, i.e., collaborative spaces that are at an early stage (e.g., Entopan's Harmonic Innovation Hubs) or at a consolidation stage (e.g., SerendPDT), or that are already

consolidated (e.g., all the other collaborative spaces). We summarized the main activities and characteristics of the selected collaborative spaces here below (Table 1).

Table 1 – Summary of the activities and characteristics of the selected collaborative spaces

Collaborative spaces	Main activities and characteristics
LVenture Group	LVenture Group is an accelerator recognized at Italian and international level since it appears in the top rankings of southern European incubators/accelerators. Since its onset, LVenture Group has accelerated 150 start-ups and recorded 13 exits. 80% of start-ups accompanied by LVenture have succeeded at getting funds at the end of the acceleration period. By the end of last year, the start-ups in LVenture Group’s portfolio (about 30 start-ups) collected 174mln euros, of which 150mln euros came from external co-investors.
G-Factor	In its four years of activity, G-Factor has accelerated 32 start-ups, investing more than 2.5mln euros in them. All in all, its start-ups have collected almost 16mln euros over the years (through 22 rounds of fundraising). G-Factor has thus far recorded two exits only. As for LVenture Group, G-Factor attracts, selects, and hosts start-ups from all over Italy and, albeit to a lesser extent, abroad.
Entopan	Entopan is a certified incubator that is currently designing two innovation hubs in Tiriolo (Catanzaro) and Catania, and has already accompanied, with its incubation and acceleration programs, around 200 start-ups and SMEs at different stages of their entrepreneurial development (of which, around 10% are based in the Calabria region of southern Italy).
SerendDPT	In addition to having a local vocation linked to reducing the brain drain experienced by the Venice lagoon, SerendDPT aims to increase local residency by supporting the creation of job and business opportunities in the Venice lagoon, while also addressing the needs of the “new Venetians”. Thus far, SerendDPT has managed to host many types of actors (e.g., students, researchers, freelancers, start-ups) coming from both Venice and the rest of Italy.
Molo 12/ The Qube	The Molo 12 coworking space and its incubator, The Qube, have a strong territorial/local dimension: since their onset, they have involved around 120 local actors based in Lecce and around 200 actors based in Brindisi, ranging from larger companies and start-ups participating in incubation and acceleration programs to freelancers, makers, and students.
Impact Hub Florence	Impact Hub Florence was founded with the aim to provide freelancers and social entrepreneurs based in Florence with in one single physical location to meet and conduct their work activities. Impact Hub Florence now hosts around 60 freelancers and social entrepreneurs. Then, the space further expanded creating the urban cultural circle (i.e., “BUH”). Recently, Impact Hub Florence has also started scouting and investing in local start-ups, along with offering them incubation, acceleration, and mentoring programs.

Impact Hub Milan

Impact Hub Milan has always tried to foster open innovation since its onset in 2010. It was founded by a group of Milan-based freelancers with the aim to accompany entrepreneurs and start-ups through incubation, acceleration, and mentoring programs, and nest them in Impact Hub's international network. It was the first Impact Hub to ever open in Italy.

Similarities and differences among our selected case studies allowed us to follow a compare-and-contrast approach. More specifically, from a methodological standpoint, the cases were studied through a qualitative approach (Yin, 2009) by means of semi-structured interviews conducted between March and June 2023 with founders and managers of the selected collaborative spaces (i.e., we conducted one interview for each collaborative space, except from LVenture Group, where we interviewed one founder and the head of communications and external relations) and the analysis of archival sources (i.e., collaborative spaces' official websites, reports, and strategic documents). The interviews focused on the professional background and role of founders and managers within each collaborative space, the main characteristics and activities of the collaborative spaces and their mission and governance, potential partnerships and projects activated at the local level, and the different actors each collaborative space interacted with in carrying out its activities. We also gathered and analyzed archival sources directly produced by the collaborative spaces to gain further insights about their activities and main strategic objectives and mission and inform and update our interview protocol. The gathering and triangulation of multiple sources allowed us to better ground and substantiate our results (see Eisenhardt, 1989). We analyzed our empirical data searching for recurring patterns through an iterative approach, whereby we went back and forth from data to theory and vice versa (see Corbin & Strauss, 1990). We all read the collected data independently, then shared and discussed interpretations until we converged on a common interpretation; hence, having multiple authors helped to ensure the trustworthiness of the analytical process.

4. Results

In this section we illustrate our results, starting from the preliminary results gained through the interpretive review, which we then further refined through the exploratory multiple case study.

4.1 The interpretive review

Table 2 reports the list of the 77 publications on collaborative spaces that we selected following our screening and review process. These publications proved most insightful to identify how collaborative spaces engage within their local ecosystems and what specific forms of engagement with the local innovation ecosystem they may enact. We erred on the side of including only those publications that we deemed as more consistent with our research goals rather than on the side of inclusion and comprehensiveness broadly, as it would have otherwise been the case with more traditional review approaches (e.g., systematic or integrative reviews). By following a principle of “saturation” (see Kunisch et al., 2023), we selected publications that we believed could give us a fair coverage of the literature and could help us synthesize knowledge by combining induction and interpretation into more general findings.

Table 2 – List of the selected publications (n = 77)

<ol style="list-style-type: none">1. Akhavan, M. (2021). Third places for work: A multidisciplinary review of the literature on coworking spaces and maker spaces. In I. Mariotti, S. Di Vita, M. Akhavan (Eds.) <i>New workplaces—Location patterns, urban Effects and development trajectories: A Worldwide Investigation</i>. Cham: Springer.2. Aslam, M.M., Bouncken, R., & Görmar, L. (2021). The role of sociomaterial assemblage on entrepreneurship in coworking-spaces. <i>International Journal of Entrepreneurial Behavior & Research</i>, 27(8), 2028-2049.3. Aumüller-Wagner, S., & Baka, V. (2023). Innovation ecosystems as a service: Exploring the dynamics between corporates & start-ups in the context of a corporate coworking space. <i>Scandinavian Journal of Management</i>, 39(2), 101264.4. Avdikos, V., & Iliopoulou, E. (2019). Community-led coworking spaces: From co-location to collaboration and collectivization. In Gill R., Pratt A.C., & Virani T.E. (Eds.), <i>Creative hubs in question</i>. Cham: Palgrave Macmillan.5. Avdikos, V., & Merkel, J. (2020). Supporting open, shared and collaborative workspaces and hubs: recent transformations and policy implications. <i>Urban Research & Practice</i>, 13(3), 348-357.6. Bednár, P., & Danko, L. (2020). Coworking spaces as a driver of the post-fordist city: A tool for building a creative ecosystem. <i>European Spatial Research and Policy</i>, 27(1), 105-125.7. Bednár, P., Danko, L., & Smékalová, L. (2023). Coworking spaces and creative communities: making resilient coworking spaces through knowledge sharing and collective learning. <i>European Planning Studies</i>, 31(3), 490-507.8. Bouncken, R. (2018). University coworking-spaces: Mechanisms, examples, and suggestions for entrepreneurial universities. <i>International Journal of Technology Management</i>, 77(1-3), 38-56.9. Bouncken, R., & Aslam, M. (2019). Understanding knowledge exchange processes among diverse users of coworking-spaces. <i>Journal of Knowledge Management</i>, 23(10), 2067-2085.10. Bouncken, R., & Aslam, M. (2023). Bringing the design perspective to coworking-spaces: Constitutive entanglement of actors and artifacts. <i>European Management Journal</i>, 41(1), 101-113.
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11. Bouncken, R., Laudien, S. M., Fredrich, V., & Görmar, L. (2018). Coopetition in coworking-spaces: value creation and appropriation tensions in an entrepreneurial space. *Review of Managerial Science*, 12, 385-410.
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13. Bouncken, R., & Reuschl, A.J. (2018). Coworking-spaces: how a phenomenon of the sharing economy builds a novel trend for the workplace and for entrepreneurship. *Review of Managerial Science*, 12(1), 317-334.
14. Browder, R.E., Aldrich, H.E., & Bradley, S.W. (2019). The emergence of the maker movement: Implications for entrepreneurship research. *Journal of Business Venturing*, 34(3), 459-476.
15. Browder, R.E., Crider, C.J., & Garrett, R.P. (2023). Hybrid innovation logics: Exploratory product development with users in a corporate makerspace. *Journal of Product Innovation Management*, 40(4), 451-474.
16. Brown, J. (2017). Curating the “Third Place”? Coworking and the mediation of creativity. *Geoforum*, 82, 112-126.
17. Butcher, T. (2018). Learning everyday entrepreneurial practices through coworking. *Management Learning*, 49(3), 327-345.
18. Cabral, V. (2021). Coworking spaces: places that stimulate social capital for entrepreneurs. *International Journal of Entrepreneurial Venturing*, 13(4), 404-424.
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21. Capdevila, I. (2019). Joining a collaborative space: is it really a better place to work? *Journal of Business Strategy*, 40(2), 14-21.
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31. Gauger, F., Pfnür, A., & Strych, J.O. (2021). Coworking spaces and Start-ups: Empirical evidence from a product market competition and life cycle perspective. *Journal of Business Research*, 132, 67-78.
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Through the in-depth analysis of the publications listed above, we uncovered three specific forms of engagement that we labeled respectively as “hosting”, “producing”, and “brokering”.

Basically, hosting captures how collaborative spaces engage in services and activities intended to attract and host within their premises local actors (both individuals, such as freelancers and solo entrepreneurs, and organizations, like start-ups and smaller companies) and external activities (e.g., events organized by cultural operators or other actors in the local community).

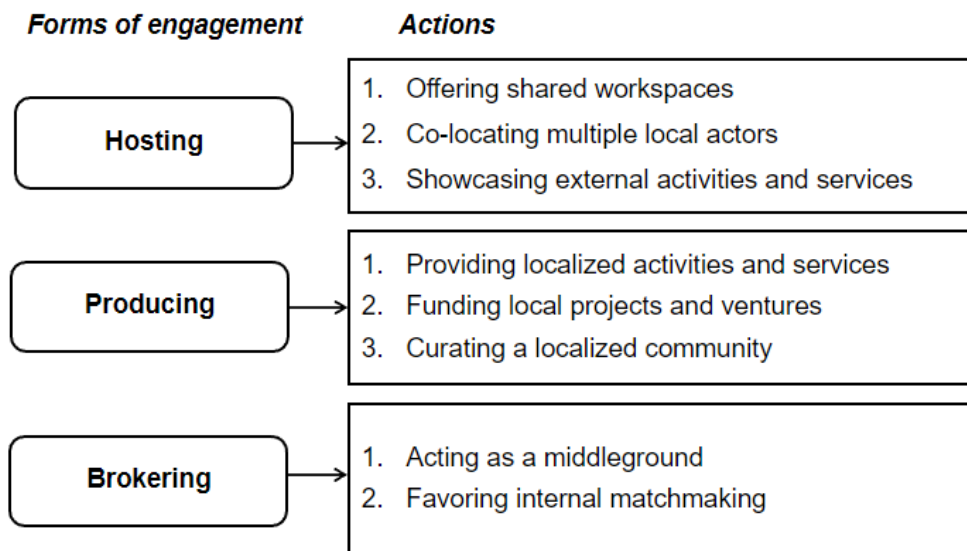
Producing captures how collaborative spaces engage in designing, organizing, and providing activities and services that take place both within and outside of their own premises, directly in the territory, such as events, workshops, or consulting, training, and fundraising activities.

Brokering captures how collaborative spaces engage in bridging the relationships among different local actors that, without such intermediation, would be disconnected and non-communicating, thus facilitating the circulation of material and immaterial resources and contributing to the combination of heterogeneous knowledge.

4.2 The exploratory case studies

The analysis of the seven case studies delved further into the forms of engagement illustrated above – i.e., “hosting”, “producing”, and “brokering” – that were inspired by our interpretive review of the literature. This allowed us to uncover the specific actions that collaborative spaces enact to engage with multiple local actors operating in the ecosystem and how these actions eventually interact with each other. Figure 1 summarizes these actions and their related forms of engagement.

Figure 1 - Summary of the actions and forms of engagement



4.2.1 Hosting: how collaborative spaces enact it

As we mentioned above, the first form of engagement – “hosting” – identifies how collaborative spaces engage within their local ecosystem as providers of facilities that host external activities, services, and actors operating locally. More specifically, we found that collaborative spaces enact this form of engagement through the following three specific actions: “offering shared workspaces”, “co-locating multiple local actors”, and “showcasing external activities and services”.

First, collaborative spaces can offer multiple shared workspaces within their premises, such as coworking areas, fabrication areas, teaching rooms, meeting rooms, event areas. In doing so, collaborative spaces often offer resources at a lower cost – or even for free, especially whenever universities or public institutions are also involved, as for some of our case studies (e.g., G-Factor or Molo 12/The Qube). By offering shared workspaces, collaborative spaces may also help professionals and entrepreneurs build up social capital and connect with other actors, in turn leading to greater creativity and innovation. LVenture Group’s founder well illustrated this: *“The fact that we offer shared desks and workspaces is a key component of our acceleration programs: this is crucial to keep our entrepreneurs in the loop and help them*

establish connections” (Interviewee #1, LVenture Group). In doing so, LVenture Group also helps attract and retain start-ups, entrepreneurs, and highly skilled professionals within the local ecosystem, as many of those who have been accelerated by the collaborative space over the years have decided to keep on renting a desk or an office “[...] *even once the [acceleration] program had ended. [...] They stick and keep on growing with us, and those who leave sometimes tell us: ‘We’d like to come back! Is there room for us?’.*” (Interviewee #1, LVenture Group).

Second, collaborative spaces can enact hosting by co-locating multiple local actors (e.g., freelancers, remote workers, entrepreneurs, start-ups, companies, citizens) within their premises, either as members more generally or as participants to specific projects, training activities, or incubation, acceleration or mentoring programs:

“We just finished a project with craft associations based here in the Venice lagoon, and we had many people working with crafts attending and meeting in our space quite frequently” (Interviewee #5, SerenDPT)

“In our open space, there are a few entrepreneurs and start-ups that we’re accelerating, and some employees of larger companies and freelancers that prefer to work alongside other people” (Interviewee #2, LVenture Group)

By favoring the co-location and proximity of multiple local actors that would otherwise be “atomized” and dispersed across the territory, collaborative spaces can also lead to serendipitous encounters and cross-fertilization processes conducive to creativity and innovation. However, co-location alone may not be sufficient for creativity and innovation to emerge. It is important for collaborative spaces to host actors that strive for collaboration opportunities, are highly motivated toward interacting with one another, and are heterogeneous enough in terms of personal and occupational backgrounds and sectors. To illustrate, the founder of Impact Hub Milan stated how they sought members that held some degree of

heterogeneity and had yet to establish themselves in their respective fields (thus, being keener to interact, gather new perspectives, and collaborate with other members):

“Our space has been highly heterogeneous since the very beginning: when we started, we had one illustrator, one lawyer, a few digital workers... They differed from one another, but they all liked it here and didn’t want to be isolated... Some of them worked together on a few things too [...] We’re not like other spaces that rent to companies who just want to get an office and ‘keep the doors shut’.” (Interviewee #8, Impact Hub Milan)

The co-location of multiple actors contributes to the economic viability of collaborative spaces and to sustaining other activities that they provide. This is well illustrated by the founder of Impact Hub Florence, who hinted at how the collaborative space struggled to stay afloat and produce new activities due to lower attendance rates and restrictions during the Covid-19 pandemic: *“The capacity of our coworking area was cut in half from day to night [...] People were not collaborating as much as they used to, but, most importantly, our own productivity plummeted [...] We couldn’t keep up with some activities; it wasn’t profitable anymore”* (Interviewee #7, Impact Hub Florence).

Finally, collaborative spaces can enact hosting by showcasing external activities and services (e.g., public talks, cultural events) produced by local actors who do not own facilities where they can deliver such activities and services and need to rent them more or less temporarily: *“I’d say we do hospitality [...] On the ground floor, we have a fully dedicated reception service... A helpdesk for those looking for a place in Venice. We also rent a couple of rooms for events now and then.”* (Interviewee #5, SerenDPT). In doing so, collaborative spaces can also increase the visibility of the activities hosted within their premises, at the same time enabling local actors that have yet to establish themselves locally to access and intercept a larger audience: *“[...] of course, some of the people that come to us are ‘smaller’ in size, or they’re just younger, and using our space could give them a bit of a boost”* (Interviewee #6,

Molo 12/The Qube). Moreover, through showcasing, collaborative spaces increase their potential impact at the local level and embed themselves even deeper within their local community. This is especially true whenever collaborative spaces showcase external activities that are either socially or culturally oriented and directly engage and address the needs of the local community: *“Once a week, we host a cultural association that is based here in the neighborhood; they organize concerts, public talks, or other events that may be small but have a great impact on the territory [...] This has made us more open, we’ve become a gathering space for the neighborhood”* (Interviewee #8, Impact Hub Milan).

As for the co-location of multiple actors, interviewees pointed out how renting facilities and showcasing external activities and services also work as a vital – and, most often, reliable – revenue stream that helps them balance their attempts to yield greater local impact with issues of economic viability that emerged as typical of the setting and managing of collaborative spaces. For instance, collaborative spaces can draw on such a revenue stream to feed the in-house production of new activities and services to be then delivered locally (and cover and recoup the costs related to their production and delivery over time). To illustrate, the founder of Impact Hub Florence stated: *“In 2019, we made one-third of our revenue just by booking our event space: it was a small space, yet it was very much appreciated [...] We also kickstarted a few projects back then: a few didn’t make it past Covid, others have moved forward”* (Interviewee #7, Impact Hub Florence).

4.2.2 Producing: how collaborative spaces enact it

The second form of engagement – i.e., “producing” – shows how collaborative spaces emerge as producers of activities and services – sometimes, by partnering with other actors – that are then offered and circulated within their local ecosystem. More specifically, we found that collaborative spaces enact this form of engagement through the following three specific

actions: “providing localized activities and services”, “funding local projects and ventures”, and “curating a localized community”.

First, collaborative spaces often provide localized activities and services (e.g., events, consulting, training activities, fundraising, incubation, acceleration, and mentoring programs) that complement the local “pool” of activities and services that is already offered by other local actors. The activities and services that collaborative spaces provide may vary a lot in their focus, for instance, by ranging from socially and culturally oriented to strictly entrepreneurship-oriented activities:

“We’ve organized a whole cultural agenda of more or less 15 events per year, mostly in the summertime” (Interviewee #7, Impact Hub Florence)

“Most of our activities of course are entrepreneurial in nature, we accelerate and incubate start-ups [...] We also engage with students, post-docs, or researchers to develop potential entrepreneurial ideas” (Interviewee #3, G-Factor)

Most interviewees pointed out how they offered education for nascent entrepreneurs, along with the consulting and training of company employees, to boost local talent and contribute to professional and business development. Thus, collaborative spaces may offer training and education activities that target different audiences and that are delivered in a more or less structured and long-term manner: “We offer many options [...] from one- or two-week long workshops or challenges to training programs that may last up to six months and after which we help participants constitute a start-up to be incubated if we deem it promising” (Interviewee #6, Molo 12/The Qube).

Many collaborative spaces provide localized activities and services in partnership with local authorities and policymakers. As a result, collaborative spaces often emerge as important tools for the effective design and implementation of creativity- and innovation-led policies (see Montanari et al., 2020). This also allows for a better fine tuning between the activities provided by collaborative spaces and the needs expressed locally, sometimes also favoring the

participation of the local community. Accordingly, the founder of Molo 12/The Qube stated as follows:

“[...] the municipality and two local universities asked us to organize a hackathon [...] We co-designed it with them, bringing to light some specific needs that we then sought to target through an incubation program. It was most definitely co-design: we collected some needs, we worked with some actors to address them, and we proposed a potential solution to those needs” (Interviewee #7, Molo 12/The Qube)

The provision of localized activities and services by collaborative spaces is also crucial for business creation and the socioeconomic development of more peripheral areas, where resources and support to creativity and innovation – such as access to funding, public/policy support, facilities, or training and education – are quite scarce. This is well illustrated by the case of Entopan, which was originally established in Tiriolo – a small town in the Calabria region of southern Italy – with the explicit aim to provide activities and services that could be impactful and could reduce the divide between smaller and larger urban areas, and southern and northern Italy: *“We wanted to have an impact, mostly entrepreneurially, but also culturally, socially, economically... We believe we can be a driving force for change for the territory [...] That’s what guides us in what we do: it would have been easier to do innovation somewhere else, but that’s not what we wanted”* (Interviewee #4, Entopan).

In some instances, collaborative spaces couple the provision of localized activities and services with fundraising or even direct investment in newly established projects and businesses. In doing so, they may also work alongside private and public actors to fund the development of innovative endeavors within the local ecosystem, thus providing local actors with both material/financial and immaterial/cognitive resources. To illustrate, G-Factor’s general manager stated as follows: *“[...] it may not be a lot, but still, we give them money: we strongly believe in the start-ups we invest in”* (Interviewee #3, G-Factor).

Funding and investing in new projects and business also helps collaborative spaces diversify their activities, in turn complementing and “*fill[ing] in the gaps*” (Interviewee #3, Entopan) in the facilities and services that other intermediaries provide to local actors in the ecosystem. This can also help collaborative spaces grasp potential opportunities to boost their own growth more easily: “*Milan is a breeding ground for start-ups, so we chose to focus a lot on incubation, fundraising, and investment, also together with a group of business angels. [...] We soon understood that Milan really needed a physical location that could encompass all these different elements. This is also why we’ve organized many events with business angels, or a workshop on impact investing open not only to start-ups.*” (Interviewee #8, Impact Hub Milan). Finally, collaborative spaces can enact producing also by curating a localized community within their premises that involves professionals and companies operating in the local ecosystem. Most of our case studies actively fostered a sense of community and a more hospitable and vibrant atmosphere thanks to the “curatorial practices” (see Merkel, 2015) performed by dedicated staff – i.e., community managers. Such practices can range from scheduling (and “routinizing”) communal lunches, aperitives, or dinners to organizing networking events for collaborative spaces’ members to get to know each other:

“We organized many events last year [...] We’ve got many requests from our members to make those events more official: so, now, once a month, there’s a ‘spritz party’ where people can chat more freely.” (Interviewee #5, SerenDPT)

“Our [community] manager truly animates the community [...] She has a ‘motherly’ approach: she organizes events or sets up prizes that she gives to our members every Friday, and she animates all our lunches.” (Interviewee #8, Impact Hub Milan)

Through their curatorial practices, community managers can also attract new members and, in the longer term, reduce potential risks of turnover in memberships. This is especially true when it comes to freelancers and entrepreneurs working independently, who would find it easier to exit a collaborative space if they did not feel bound to it through a sense of community

developed over time: “[...] *although there are many freelancers and fewer start-ups, they still stay here. We’ve had some turnover, but many have stayed with us for quite some time now, they’re ‘tenured’.*” (Interviewee #8, Impact Hub Milan).

The curation of communal dynamics and a more hospitable and vibrant atmosphere can be framed as a proper service that collaborative spaces provide to their members alongside more “tangible” activities and services to favor interaction and collaboration and, in turn, creativity and innovation. The provision of such an “intangible” service – i.e., the curation of a community for members to belong to – also helps collaborative spaces position themselves and be perceived by local actors as better settings to conduct their work activities compared to other settings, such as a company offices, more traditional office rentals/business centers, or one’s own home:

“[Our members], they’re in a community of peers, they’re all friends, and it all revolves around this space [...] We gave this place a ‘spirit’ that is very hard to replicate: that’s something we really cherish.” (Interviewee #5, SerenDPT)

“Our members choose us because of our values, because we approach coworking more as a family compared to business centers, who may be efficient and all but are too ‘anonymous’ and ‘aseptic’.” (Interviewee #8, Impact Hub Milan)

By curating communal dynamics, community managers can also cultivate social support and mutual trust within collaborative spaces, with members perceiving each other as more “proximal” and being more likely to share ideas and projects and activate cross-fertilization processes as a result: *“There are opportunities for cross-pollination here [...] You must build them up, it takes time and dedication! It’s more likely for these opportunities to come from an environment that helps you and where you trust others... It’s like planting a seed: it’s easier to plant it in a forest rather than a desert!”* (Interviewee #1, LVenture Group).

4.2.3 Brokering: how collaborative spaces enact it

The third form of engagement – i.e., “brokering” – shows how collaborative spaces emerge as brokers of relationships among multiple local actors that operate either inside or outside collaborative spaces’ premises. More specifically, we found that collaborative spaces enact this form of engagement through the following two specific actions: “acting as a middleground” and “favoring internal matchmaking”.

First, collaborative spaces can enact brokering by acting as a “middleground” (see Capdevila, 2015) that connects – and intermediates the relationships among – actors operating in the local ecosystem and pertaining to multiple sectors that would otherwise struggle to foresee opportunities to interact and collaborate: “*We’ve started with the five ‘forces’, the five ‘types’ of actors, or whatever they’re called... Citizens, companies, associations interested in disseminating entrepreneurship, the university, the municipality, and other stakeholders... We’ve been the first to try to make them work together on shared projects and reach outcomes that could benefit them all [...] It’s been no easy fit!*” (Interviewee #6, Molo 12/The Qube).

Collaborative spaces often intermediate the relationships, and the sharing and exchange of knowledge and other resources, between more established actors in the ecosystem (e.g., larger companies, public institutions, investors and funders) and less established ones (e.g., nascent entrepreneurs, start-ups, students). In doing so, they make it possible for less established actors to gather resources more easily, embed themselves, and gain greater visibility and recognition within the local ecosystem, while also mobilizing and opening the boundaries of more established actors:

“Of course, we created a whole network of industrial partners, investors, universities, research centers [...] We may select investors, universities, or other partners from our network depending on what we need, and have them meet our start-ups, let’s say, once a month.” (Interviewee #3, G-Factor)

“Most companies are ‘silos’ that do not talk to anyone. They can’t start a spark on their own: that’s why our job is to set opportunities for innovation, otherwise we wouldn’t be needed!” (Interviewee #1, LVenture Group)

Interviewees suggested how the taking up of a middleground role within the local ecosystem is not always straightforward, as it should be enacted depending on the specific characteristics and needs of local actors, and it could require collaborative spaces to first reach some critical mass and better establish themselves within the ecosystem: *“[...] For the first three or four years, we just focused on our own internal community: once we felt ready, we moved to a larger location and opened it to citizens and people needing us. [...] We first needed to focus on ourselves and, only then, starting bringing our ‘hub outside of the hub’ by partnering with cultural operators and businesses in the neighborhood”* (Interviewee #7, Impact Hub Florence). By addressing the specific needs of its local community, Impact Hub Florence also managed to draw connections among local providers of services relating to education, health, and welfare that held a high public value, in turn fostering social innovation and exerting a positive social impact on the territory: *“[...] we’ve ‘combined’ students, schools, and third-sector associations [...] In this way, we contributed to social cohesion and had a more indirect impact: it’s not a direct impact, as it’s not about organizing a workshop or something, but it’s still important, because it’s about ‘intercepting’ and ‘combining’ actors”* (Interviewee #7, Impact Hub Florence).

Most interviewees agreed on how holding a strictly spatial/physical dimension is crucial for them to successfully broker relationships within their local ecosystem and foster innovation:

“The physical dimension is important: our tenants find an ecosystem here, we make them easily accessible to all the stakeholders they must interact with, may them be investors, clients, suppliers, younger talents, universities [...] It’d take too much time online, there’d be too many barriers.” (Interviewee #1, LVenture Group)

“We’re aware that it’s all becoming much more ‘diffused’ now, but we believe that our physical dimension is still very important for innovation, because it makes it easier for people to gather and build some common values.” (Interviewee #4, Entopan)

However, some of our case studies still blended both a physical and a digital brokering in the attempt to expand their outreach beyond their local ecosystem – e.g., by engaging start-ups, companies, investors, or mentors residing outside of the territory, as for G-Factor – or to facilitate the sharing of experiences, practices, and resources and the production of activities among local actors dealing with innovation – e.g., by setting a dedicated digital platform, as for Impact Hub Florence: *“[...] we created a platform with all the actors that do innovation here in Florence, may them be incubators, coworking spaces, the municipality, or the chamber of commerce”* (Interviewee #7, Impact Hub Florence).

Second, collaborative spaces can also enact brokering by favoring internal matchmaking. In doing so, collaborative spaces can actively foster connections – and intermediate the relationships among – the multiple “internal” actors working within collaborative spaces’ premises (i.e., members, or participants to specific projects, training activities, or incubation, acceleration or mentoring programs). By favoring internal matchmaking, collaborative spaces can “bridge” together the actors that populate their premises in the attempt to facilitate social support and increase participation, as illustrated by LVenture Group’s founder: *“It takes some effort [...] It’s far from a ‘passive’ thing, it must be an ‘active’, or even ‘proactive’, thing: people must feel free to reach out if they need it and contribute and create some value for anyone else here if necessary”* (Interviewee #2, LVenture Group).

Thanks to the internal matchmaking favored by the staff of collaborative spaces, members can mobilize the contacts and networks they may have developed over time with other people or companies that are located within their same collaborative space to find new jobs, collaborators, investors, or business partners or to access new clients either by selling to other members directly or by tapping into other members’ client base:

“We’re all connected [...] We talk to the start-up teams every day, whenever we take a coffee break, there’s actually a network: if they need anything, they always have someone here ready to help them” (Interviewee #3, G-Factor)

“[...] two graphic designers contacted us because they were looking for new clients, we actually brought them together and now they share almost entirely the same clients”
(Interviewee #8, Impact Hub Milan)

Finally, matchmaking can be more easily enacted whenever members or other internal actors working within collaborative spaces show similar and complementary skills, needs, or objectives to be matched. In turn, similarity and complementarity can enable different forms of proximity within collaborative spaces, and whose combination can be conducive to creativity and innovation (see Boschma, 2005). Coherently, some interviewees pointed out how they purposefully selected members, or participants to incubation or acceleration programs, that could well complement each other in terms of what they needed and what motivated them to attend a collaborative space, and that could be more easily matched as a result:

“We do a first round of selection to see if the projects we receive are more or less aligned [...] It’d be difficult to put together entrepreneurs that have start-ups at very different levels of maturity, or that work on very different topics.” (Interviewee #3, G-Factor)

“Our programs have many young entrepreneurs [...] We encourage them a lot to come here and interact with their peers, as they’re all living similar experiences and can support each other somehow.” (Interviewee #1, LVenture Group)

5. Discussion and conclusion

Our study aimed to understand how collaborative spaces engage with local innovation ecosystems, thus favoring creativity and innovation at the local level. Initially, inspired by our interpretive review of the literature, we identified three different forms of engagement, that we

labeled respectively “hosting”, “producing”, and “brokering”. Then, we delved into these three forms of engagement, identifying through which specific actions they can be enacted and finding out that they interact each other, activating a virtuous cycle.

More specifically, we identify “hosting” as the form of engagement that captures collaborative spaces as providers of resources and physical places that host different local actors (e.g., freelancers, entrepreneurs, start-ups, smaller companies, remote workers, etc.) and external activities and services to increase their visibility and impact at the local level. From the empirical analysis of our selected case studies, we understand that hosting can be enacted through specific actions that are basically offering shared workspaces, co-locating multiple actors within their premises and showcasing external activities and services by renting facilities to local actors. Our results emphasize how the co-location of diverse actors within the collaborative space may foster creativity and innovation at the local level (even though collaboration and motivation among co-located actors appear crucial), while renting facilities and showcasing external activities generate revenues that may contribute to collaborative space’ sustainability and foster the in-house production of activities, through “producing”.

“Producing” is the second form of engagement that we identified from literature and captures collaborative spaces as producers of own activities and services – sometimes, by partnering with other actors – that are then offered and circulated within the local ecosystem. Empirically, we found that collaborative spaces may engage with producing, basically providing localized activities and services, funding new local projects and ventures, and curating a localized community.

Finally, we identified that “brokering” is the form of engagement that captures collaborative spaces as brokers both within and outside the space, basically fostering relationships among the different local actors hosted within their premises and other actors operating outside. More

specifically, from the cases studies emerge that collaborative spaces perform brokering by means of actions of acting as a middleground and favoring internal matchmaking.

Taken together, our findings suggest that the three forms of engagement we identified are complex sets of different activities and roles. More specifically, while hosting appears a more passive form of engagement, through producing and brokering collaborative spaces seem to engage more actively with the local system. Indeed, as we illustrated above, hosting engages collaborative spaces as passive providers of facilities and showcases of local actors and external activities and services. Accordingly, by means of hosting collaborative spaces play an accommodating and receptive role within the local ecosystem, basically aimed to activate outside-in flows of knowledge and other resources, thus fostering more “inbound” innovation processes (e.g., West & Bogers, 2016). Conversely, brokering and producing refers to collaborative spaces taking on a more active role within the local innovation ecosystem as brokers of relationships and producers of activities and services, often in partnership with other actors. This role entails (co)creating, circulating knowledge, service and other resources (including trust) within the local ecosystem, thus not only activating “inside-out” flows but also maintaining knowledge outside, as a result promoting “coupled innovation” (e.g., Lichtenthaler, 2011).

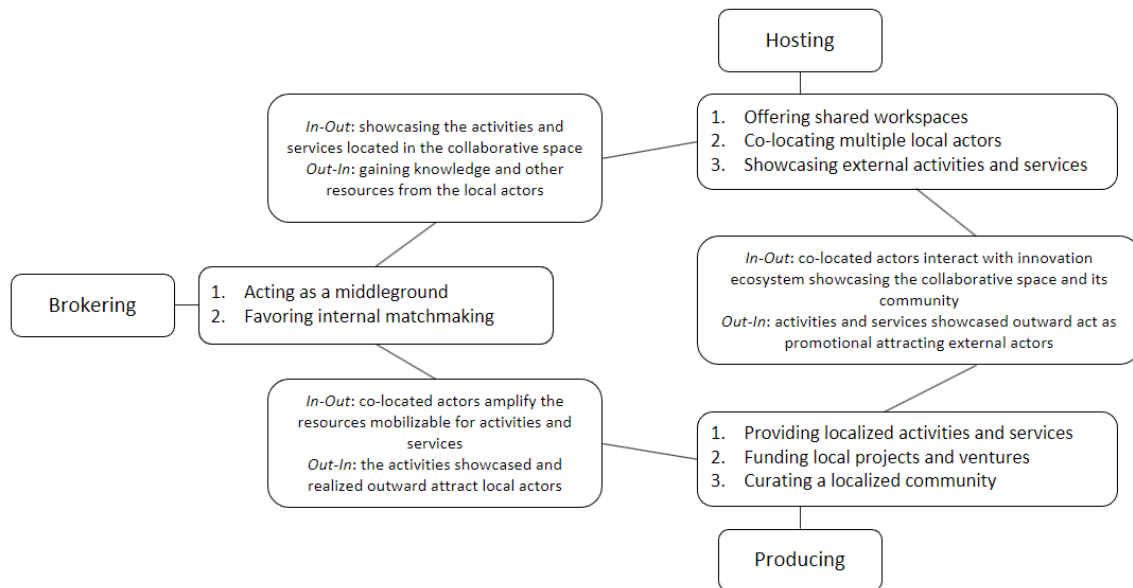
From a theoretical standpoint, these three forms of engagement can be considered as alternatives to one another, outlining a continuum ranging from the passive form of hosting to the more active engagement represented by producing and brokering. However, from the seven case studies, interactions between these two forms of engagement and the fundamental interplay role by brokering emerge. Through brokering collaborative spaces build a network of relationships that favor both hosting and producing, maintaining both outside-in and inside-out flows of knowledge and other tangible and intangible resources (e.g., services, trust, etc) and

thus coupling inbound and outbound processes of innovation (e.g., Cassiman & Valentini, 2016).

More specifically, we found that hosting benefits from both producing and brokering. Relationships established with actors in the local ecosystem are crucial for attracting potential users. Indeed, on one hand, relationships centered around brokering provide the opportunity to showcase the activities offered by the space (outbound flow); on the other hand, they provide the chance to understand the needs of local actors (inbound flow), enabling the adaptation of offered activities. Furthermore, the activities and services produced by collaborative spaces become actual “promotional objects” (outbound flow) that can attract new local actors (inbound flow) and create environments for interaction and intermediation. Similarly, producing benefits from both hosting and brokering. The co-location of various actors (inbound flow) amplifies the potentially mobilizable resources for the production of activities and services (outbound flow). Simultaneously, facilitating relationships between actors located inside and outside the space promotes resource sharing and collaboration in production, serving as a catalyst for resources, actors, and actions. Brokering, finally, goes beyond merely favoring the other two forms of engagement; it is also facilitated by them. Co-location and co-production generate catalytic settings, attractive to numerous actors who become intermediatable nodes in social networks.

To sum up, Figure 2 show how, by means of brokering, collaborative spaces play an intermediary role within the local innovation ecosystem, ensuring a continuous flow of ideas, resources, and collaborations among external actors (attracted and retained by means of hosting) and internal activities and services (generated by means of producing). This, in turn, enhances the position of collaborative spaces within local innovation ecosystems that may engage in a mutually beneficial and reinforcing cycle.

Figure 2 - The virtuous cycle of innovation triggered by collaborative spaces



To conclude, our exploratory study has investigated how collaborative spaces engage with the local innovation ecosystem to promote interactions and collaboration among the actors of this ecosystem, thus sustaining innovation, entrepreneurship, and the development of the same ecosystem. More specifically, we have shed light on the different levels of collaborative spaces engagement within their local innovation ecosystem and specific activities that these spaces may enact to engage with actors of this ecosystem. In doing so, we identified different forms of engagement, more passive and more active, which may couple leverage on inbound and outbound knowledge flows.

Our contribution to extant literature is threefold.

First, we contribute to extant studies on collaborative spaces and local innovation (see Montanari et al., 2020), shedding more light on how these spaces may operate within their local context, pursue economic sustainability and contribute to innovation at the local level.

Second, we provide further empirical evidence on how the three different open innovation processes recognized by extant literature, basically, as organizational strategies (e.g., Enkel et

al., 2009) may be actually pursued also at the local level thanks to the action of collaborative spaces which can not only activate exploratory outside-in flows and, or exploitative inside-out flows, but also favor the coupling of inbound and outbound flows.

Finally, we add literature on helix models, suggesting a further development of these models to include collaborative spaces as a further helix of the local ecosystem that, through hosting and producing, may contribute to innovation by leveraging on both inbound and outbound processes and, through brokering, may enable the relationships among the other helices of the ecosystem.

Of course, our study presents some limitations that open to future lines of research. One limitation is methodological: we drew our first level of analysis on an interpretive literature review, whose results could be refined and extended by means of a more systematic review.

Another limitation is that we have observed only a few case studies and all in the same country, reducing the possibility of understanding the influence of context. Furthermore, the evidence gathered did not allow us to understand whether and how different forms of engagement can be combined with each other. In the future, we may therefore consider conducting more case studies to see if there are other forms of engagement, how the different forms combine with each other, and how the territorial context influences the combination among forms of engagement.

Another strand of potential research concerns the combination of physical and digital actions to engage local actors of the innovation ecosystem. Regarding this, different approaches and perspectives emerged from the interviews, however, not in depth enough for us to delve into them. Future studies could try to address this issue more in detail.

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